

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

REC'D 11 AUG 2005

WIPO.

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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:  
XIAOCHUAN ZHOU  
2212B BELLEFONTAINE STREET  
HOUSTON, TX 77030

Date of mailing  
(day/month/year)

**09 AUG 2005**

Applicant's or agent's file reference

ATA04001-PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US05/05389

International filing date (day/month/year)

18 February 2005 (18.02.2005)

Priority date (day/month/year)

18 February 2004 (18.02.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): C12Q 1/68; C12M 1/36; C07H 21/04C12P 19/34 and US CL: 435/6, 91.2, 174, 283.1, 287.2; 536/23.1, 24.33

Applicant

ZHOU, XIAOCHUAN

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

BJ Forman

Telephone No. (571)272-0500

Form PCT/ISA/237 (cover sheet) (January 2004)

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US05/05389

**Box No. I Basis of this opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US05/05389

**Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims <u>10, 12, 16, 18</u>	YES
	Claims <u>1-9, 11, 13-15, 17, 19-26</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-26</u>	NO
Industrial applicability (IA)	Claims <u>1-26</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-6 lack novelty under PCT Article 33(2) as being anticipated by Rothberg et al (U.S. Patent Application Publication No. 2003/0068629 A1, published 10 April 2003) or Quate et al (U.S. Patent Application Publication No. 2002/0025529, published 28 February 2002).

Claims 1-6 are drawn to a device comprising a plurality of chambers, each having first and second conduits and first and second channels. In further embodiments, the device comprises oil, or gas or beads wherein the interior surface of a channel is hydrophobic. Rothberg et al disclose the device as claimed (¶ 65-70 and 105-110). Quake et al disclose the device as claimed (¶ 125-133).

Claims 7-9, 11, 13-15, 17 and 19-26 lack novelty under PCT Article 33(2) as being anticipated by Rothberg et al (U.S. Patent Application Publication No. 2003/0068629 A1, published 10 April 2003) or Hooper et al (U.S. Patent Application Publication No. 2003/0017467, published 23 January 2003).

The claims are drawn to method of amplifying nucleic acids comprising the steps of immobilizing first and second primers and a probe that are separated from each other and solid support by a cleavable linker. The method further includes steps of reagent delivery and amplification. Rothberg et al disclose the method wherein the immobilized primers are derived by primer extension of a circular template (Fig. 1A, ¶ 47-50). And Hooper et al disclose the method (Examples 1-5).

Claims 10, 12, 16 and 18 lack an inventive step under PCT Article 33(3) as being obvious over Rothberg et al (U.S. Patent Application Publication No. 2003/0068629 A1, published 10 April 2003) or Hooper et al (U.S. Patent Application Publication No. 2003/0017467, published 23 January 2003).

The claims are drawn to the methods of amplification wherein the cleavable linker consists of a uridine or is cleavable using Rnase. While Rothberg and Hooper do not specifically teach the claimed linkage, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the linkage of Rothberg and/or Hooper with any linkage known in the art based on the teaching of Rothberg wherein numerous and varied linkages are equally useful in the method (¶ 145-158).

Claims 1-26 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

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Applicant's or agent's file reference <b>ATA04001-PCT</b>		Date of mailing (day/month/year) <b>09 AUG 2005</b>
International application No. <b>PCT/US05/05389</b>		FOR FURTHER ACTION See paragraph 2 below
International filing date (day/month/year) <b>18 February 2005 (18.02.2005)</b>	Priority date (day/month/year) <b>18 February 2004 (18.02.2004)</b>	
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Applicant <b>ZHOU, XIAOCHUAN</b>		

**1. This opinion contains indications relating to the following items:**

- |                                     |              |  |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the opinion   |
| <input type="checkbox"/>            | Box No. II   | Priority   |
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| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention   |
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Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer BJ Forman Telephone No. (571)272-0500
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International application No.

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INTERNATIONAL SEARCHING AUTHORITY

International application No.  
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1. Statement

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Inventive step (IS)	Claims <u>NONE</u>	YES
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